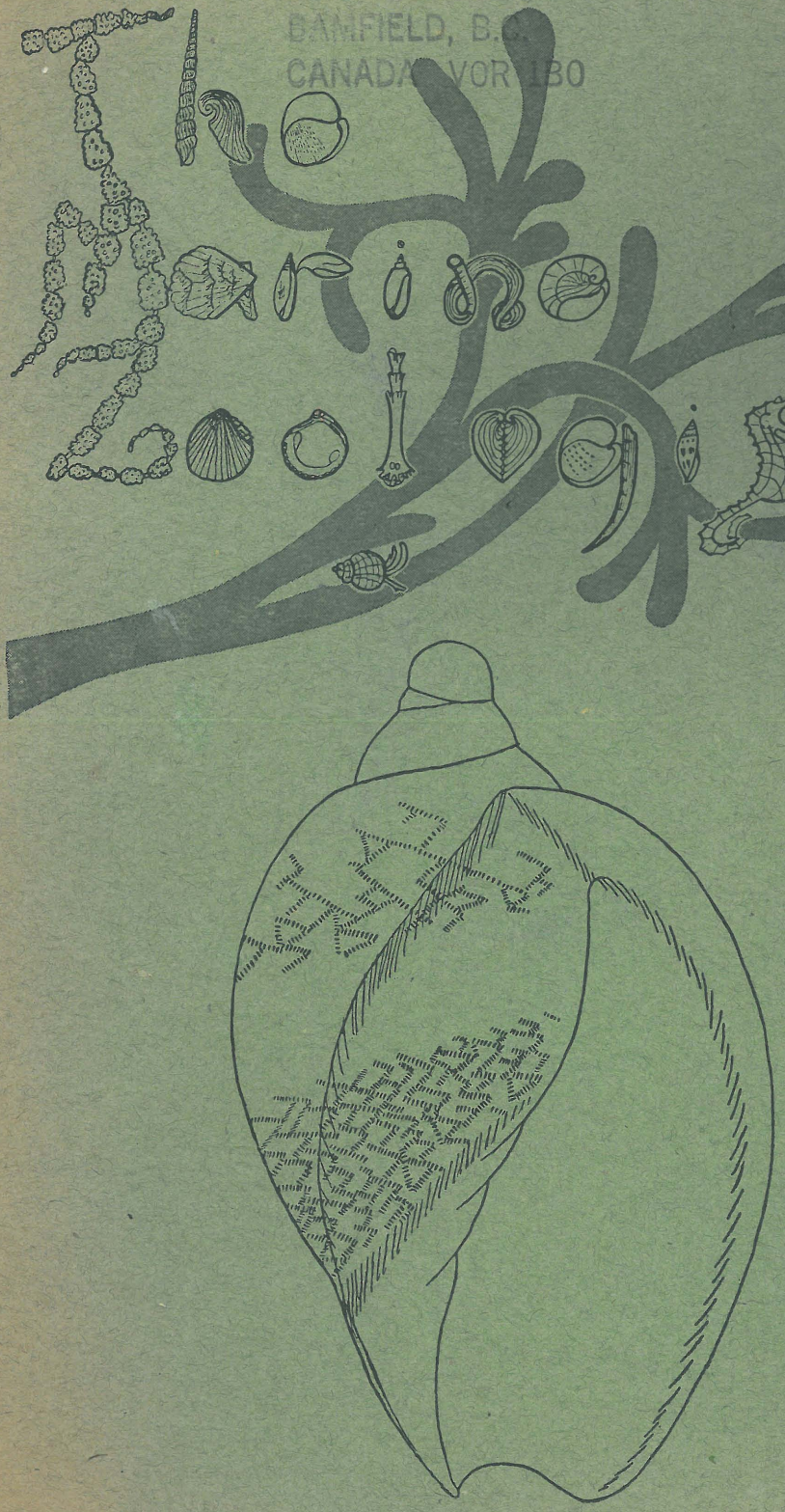
[VOL. 1 #1?]

The Marine Zoo



"THE MARINE ZOOLOGIST"

Introduction

This is the first issue of the "Marine Zoologist," a dream which has come true at last for us, for we have desired a paper of our own for many years. We must thank the Council of the Royal Zoological Society for the realisation of this project and for their keen interest in our venture.

The "Marine Zoologist" is incorporated with the "Proceedings of the Royal Zoological Society." The reprints of this part will then be bound under our own cover and become our own magazine. We hope that the infant will become in time so lusty that it may walk alone. In these first hesitant steps we present to you some of the results of our field collecting and study. Most of us are interested in the various forms of conchology and malacology.

The sub-editors have asked Mrs. Woolacott, one of our senior members, to write an introductory article entitled "Outlines," which defines the fields of study which we hope to follow in future issues of this magazine.

We must thank Miss Joyce Allan, Conchologist of the Australian Museum, Mr. T. Iredale, and Mr. Bernard Cotton for their support and for the articles they have so kindly promised to contribute to our magazine.

(Signed) Miss G. Thornley,
Mr. D. McAlpine,
Sub-Editors.

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OUTLINES

By Mrs. L. Woollacott

It is the aim and purpose of members of the marine group of the Royal Zoological Society of New South Wales to collect marine specimens, living and dead, to study them in every manner possible, using available literature as well as observations in the field; and to publish their findings and conclusions in this small journal once a year.

Naturally, we hope to expand considerably as the years go by, and, in due course, to produce a small magazine that will be of great benefit to later students in our chosen field, especially in view of the fact that material readily available to-day may be difficult or even impossible to obtain a few years from now.

Members of the Marine Section of the Royal Zoological Society are asked to contribute towards the cost of production of this journal and to pay a reasonable amount for each copy, in order that we may have blocks made and to raise funds for future publications.

We wish to acknowledge the fine gesture made by the Royal Zoological Society in permitting us to include our notes and records in the Annual Proceedings of the Society. Without this assistance and encouragement it would not have been possible to make a beginning for a long time to come, and certainly not under such favourable circumstances.

Up to date, most of the work done has been in the molluscan fauna, as the bulk of the members are shell collectors, but, as time goes on, we hope to acquire students in other branches of marine work and so round out our studies to give a more comprehensive picture of the marine life of New South Wales. The main reason for selecting New South Wales as our field of operations is obvious, as we are all members of that State, but a greater and more significant factor is that Australia as a whole presents such a vast and bewildering number of marine species that it is quite beyond the ability of a small group, such as this, to do justice to in a lifetime; nevertheless, occasional excursions into other States will be made, from time to time, for studies of particular interest.

The Australian marine fauna has suffered the fate of much erroneous nomenclature, owing, in part, to the fact that the early naturalists visiting our shores gave European names to the material collected. These names are in constant process of alteration, and much painstaking and exhaustive study of literature is necessary to unravel the names of some of the commonest of our sea shells and other marine fauna. This study is termed taxonomy.

Taking a section of the animal kingdom, such as the marine molluscan fauna of any given country, or part thereof, and listing the names in the approved scientific method, with the species name being followed by the name of the authority for such species, is termed systematics, and is a very necessary foundation for any subsequent study of that particular fauna. It has been said that systematics is the lowest form of science, but granting that there may be a modicum of truth in this assertion, it is still the Sound Rock on which all the rest is built.

Having sound and authoritative lists of the marine creatures to be found in a given area, a student may branch out from that point and take up any one of several interesting aspects of marine life such as Mollusca (shells). He, or she, may work hard to collect every species mentioned on the list, or find the greatest joy in adding entirely new species to that list. Then, again, there is the study of the living animal and all its soft parts; how it breathes, eats, moves and mates, and the shape and structure of all the organs. This study of the living animal is termed melecology, and, by a sound knowledge of the difference in the animals, many otherwise difficult problems may be solved and a new species established or an old one discarded.

Next we have investigation into the habits of the creature, its seasonal migration, the area in which it prefers to live, what particular association of other marine flora or fauna is necessary to its well-being, the degree of salinity, the amount of muddy silt which it can tolerate (or even prefer), the food on which it lives, the temperature which it can endure, the mating habits and seasons, and the type and form in which the eggs are laid. All these factors, and many more as well, constitute one of the most fascinating of all the studies, ecology. All collectors know that certain marine species are found only within a very narrow, restricted belt between high and low watermarks, sometimes a matter of a mere band of a few inches, and that it would be futile to look for such species either above or below these special living quarters. Other species have a limited coastal range, being found only on a strip 200 or so miles in extent; and yet there are other species which have a most remarkable range, living in New South Wales and extending through Queensland to Darwin, showing an adaptability of the most amazing kind. Many marine creatures live in deep water only, show a very close affinity with other deep-water species many hundreds of miles apart. If all the knowledge obtained by various collectors could be competently tabulated, it would not be long before a very comprehensive scheme of the marine ecology of Australia could be worked out and published.

Most of the students' findings can be fairly well conveyed by the written word, but that is not now sufficient for the ultimate designation of a particular species, and illustrations are imperative to finalise the matter for all time, so we find that the artist is necessary to give the final touch to all our observations.

Some of our members are interested in taxonomy and systematics and have prepared and are preparing illustrated papers on these subjects. Others are interested in malacology and ecology and are studying the living animal and its ways, and recording these for future generations. One member is well advanced in the study of our land snails from all possible aspects and has carried out some very fine experiments in breeding and in recording the results of special foods. I am sure that all this worthwhile work will be carried on, and this publication will be the means of encouraging our members to continue to investigate, study and experiment, in the knowledge that their efforts will be appreciated and their results published.

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A SHELL THAT BUILDS A HOUSE

By C. F. and J. Laseron

A new record for New South Wales is the extraordinary little bivalve *Gastrochaena*. When examining material brought up by the harbour dredge Triton from 6-9 fathoms in the West Channel of the Sow and Pigs Reef in Port Jackson, our attention was attracted by small blisters on worn fragments of larger shells. When broken open each of these was seen to contain a small bivalve. The shell itself is undistinguished, thin, white, elongated and very inequilateral, the umbones terminally placed, and the united valves gaping widely along the whole of the ventral margin. From comparison with figures of the Tasmanian species, *G. tasmanica* Ten. Woods, no essential differences could be detected, and the New South Wales shell may be tentatively taken as identical. *G. tasmanica* has also been recorded from South Australia, but the South Australian shells have a slightly different shape and may be a different species.

The main interest in *Gastrochaena* lies in its habit of constructing a flask or house, in which the shell remains hidden throughout its life. As the size of the flask is adapted to the size of the shell, the problem arises how the flask is enlarged from the inside. There would seem to be only one solution. Examination of the surface of the flask with a lens shows that it is covered with a number of small, rounded, bubble-like protuberances. Each of these evidently marks where the wall has been dissolved away from the inside and a small annex secreted. In this way the size of the flask increases as the shell within grows.

Further examination shows that in the larval stage the bivalve actually bores just below the surface into the dead shell, emerging some distance away, where it begins to construct the flask. A tube is thus left through which the elongated siphons protrude, and thus the animal, though apparently completely enclosed, is able to find microscopic life for its sustenance.

There is in Queensland an allied species which shows rather a different habit. In this the larval shell bores completely through a piece of dead shell and emerges always on the opposite side. The flask, instead of being covered with small bubbles, is perfectly smooth, but is divided into regular segments, each showing where the end of the flask has been dissolved out, and a larger addition made.

Specimens of the flasks and shells have been placed in the Marine Section's Collection.

NOTES ON SOME SIPHONARIIDAE

(CLASS GASTROPODA)

By David McAlpine

The commonest member of the *Siphonariidae* living in the vicinity of Sydney has been known as *Siphonaria scabra* Reeve for many years. Examination of Reeve's description and figure (Conch. Icon., Vol. lx, Siphonaria, pl. 1, fig. and sp. 2, March, 1856) shows that this is based on Quoy and Gaimard's *Siphonaria diemenensis,* the differences pointed out by Reeve being merely individual, not geographical, though races may be separated at a later date when very many series are available.

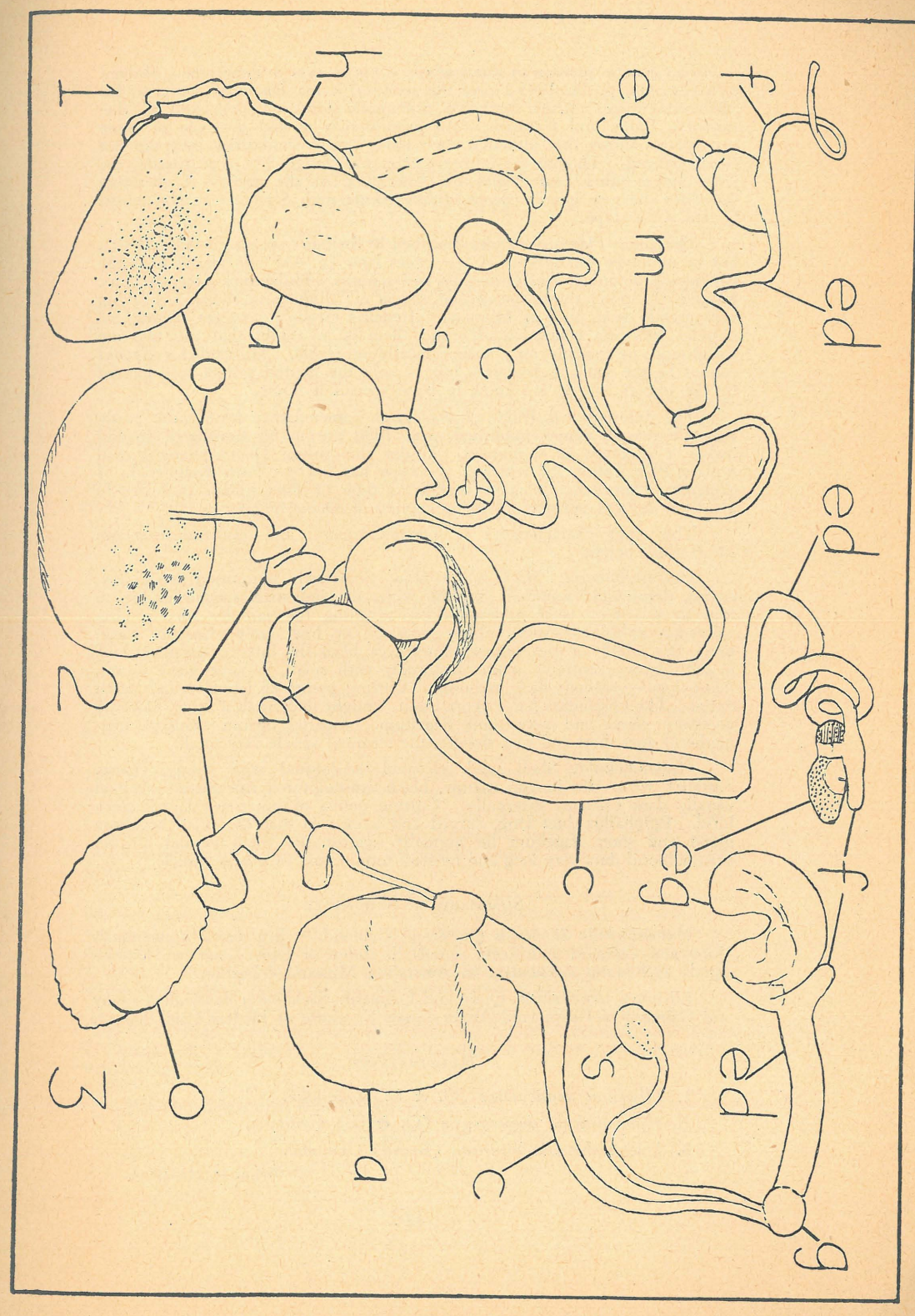
Quoy and Gaimard's species, *Siphonaria denticulata,* was described from Western Port, Victoria (Voy. Astrolabe, Zool., vol. ii, p. 340, pl. 25, figs. 19-20, 1833) and has been confused with S. *diemenensis* Q. and G. (*op. cit.*, p. 327, pl. 25, figs. 1-12, 1833) by some recent authors, but is a very different species. Most Victorian specimens determined as *denticulata* in the Australian Museum collection are not that species at all, but are *diemenensis.* In one case the correct name *diemenensis* has been crossed out and *denticulata* has been substituted. The true *denticulata* appears to be rare in Victoria except perhaps within bays.

Miss E. Pope, of the Australian Museum, has kindly collected many specimens of *Siphonariidae* from the open coast in a number of localities in Victoria, and though always searching for *denticulata,* failed to find it even at Mallacoota in the extreme east of the State. Western Port, the type locality, is much further west, but is not on the open coast. The only Victorian specimens I have seen which agree with the figure of *denticulata* are from Red Bluff, Gippsland, and are specifically identical with the Sydney species erroneously called *scabra* by Hedley and by most workers since. Angas's record of *denticulata* from New South Wales (Proc. Zool. Soc., London, 1867, p. 232) must now be accepted as correct.

Reeve described S. *scabra* as coming from Port Jackson and this localisation probably caused later workers to use his name incorrectly for the commonest species living there (i.e., *denticulata* Quoy and Gaimard, Reeve and Angas, but not of recent authors). The true *scabra,* whose correct name is *diemenensis,* really occurs in Port Jackson, but is quite scarce, and has not previously been recorded under its correct name from this locality, although known as *diemenensis* in Southern Australia.

Iredale introduced a new generic name, *Ellsiphon* (Aust. Zool., vol. ix, pt. 4, p. 437, Dec., 1940) with type (by monotypy) the Queensland *E. marza* Iredale, which I regard as doubtfully distinct from *denticulata.* As it differs anatomically from *Siphonaria* s.str. the species listed by Hedley as *Siphonaria scabra* must bear the name *Ellsiphen denticulatus* Quoy and Gaimard. An account of the features of the genital organs of *Ellsiphon* is given below because of their importance in the classification of this group.

Spermatheca normal, the duct moderately long; epiphallus duct long, slender, terminating in a small gland and rather long flagellum; muscular sac of genital atrium present, but small. The epiphallus seems to separate this genus from Hubendick's section *Sacculosiphonaria.* The shell in that group is said to have reticulate sculpture, while in *Ellsiphon* the sculpture is radial only.



The generic position of *diemenensis* is not so easy to determine. Hubendick (*op. cit.*, p. 58, 1945) gave the sectional name *Ductosiphonaria* to his "Bifurcatagruppe," which included *Siphonaria bifurcata* Rve. and *S. diemenensis* Quoy and Gaimard. An examination of the genitalia of these two species shows that although they have certain similarities they are not closely related. Though the former species was designed as type species, the latter agrees much better with his description of the group. I therefore introduce the new generic name *Hubendickula* with *Siphonaria diemenensis* Q. and G. as type.

The genus *Planesiphon* was described by Iredale (op. cit., p. 437, 1940), but no genotype was given. A few pages later (p. 441) he placed in it the two newly described species *elegans* and *soranus*. Hubendick (*op. cit.*, figs. 44 and 47, 1945) shows the genital system of *"Siphonaria elegans"* differing very greatly from that of *bifurcata*. Iredale's *elegans*, however, closely resembles *bifurcata* conchologically and there is no doubt that the two are congeneric, or possibly only subspecifically separable. Hubendick's *elegans* cannot be the same as Iredale's, but as only the genital system was figured by the former, we do not know to what species it refers.

The International Rules of zoological nomenclature state quite justly that all generic names published after 1930 are to be considered invalid unless a genotype is designated. Under this ruling *Ductosiphonaria* will replace *Planesiphon* for which a genotype has not yet been designated. I designate *Planesiphon elegans* Iredale as type of *Planesiphon* in order to give it a definite position in the synonymy of *Ductosiphonaria*.

The chief characteristics of *Ductosiphonaria* and *Hubendickula* are summarised below.

Ductosiphonaria: Shell rather thin, depressed, sculptured with few, coarse, depressedly rounded ribs, the wide, flat interstices containing up to four or five fine, weak riblets, seldom rivalling the primary ribs in size; coloration pallid, interstitial riblets separated by fine, brown lines or sometimes the whole of the primary interstices blackish; interior greenish buff to light brown centrally, white marginally with small, variable black marks. Animal pale, without dark markings. Cutting points of lateral radula teeth entire. The epiphallus has a short, stout, straight duct with a large, elongate accessory gland and very short flagellum. Genital atrium swollen; spermathecal duct short and very slender, the terminal vesicle very small.

Hubendickula: Shell solid, elevated, sculptured with strong, coarse, rounded, white ribs having narrow, black, unsculptured interstices. Animal usually dark coloured externally. Cutting points of innermost lateral teeth bifid. Epiphallus duct long, curved and looped so that the small accessory gland and short flagellum lie normally against the small genital atrium. Spermathecal duct very long and twisted, terminating in a large vesicle.

Summary of Synonymy

Hubendickula diemensis Quoy and Gaimard + *Siphonaria diemenensis* Quoy and Gaimard and Reeve equals *S. scabra* of Reeve (not of Hedley) equals *Siphonaria denticulata* in Australian Museum collection.

Ellsiphon denticulatus Quoy and Gaimard: *Siphonaria denticulata* Quoy and Gaimard of Reeve, and Angas equals *S. scabra* of Hedley (not Reeve).

Illustrations

1. *Ellsiphon denticulatus* (Q. & G.) *Genitalia.*
2. *Hubendickula diemenensis* (Q. & G.) *Genitalia.*
3. *Ductosiphonaria bifurcata* (Reeve) *Genitalia.*

Delin. D. McAlpine.

A NEW THAIS FOUND ON A LOG AT PORT STEPHENS

By Gertrude Thornley

One sunny day towards the end of August, 1950, Mrs. Jackson and I paused to rest after collecting at Hawkesnest Beach on the northern side of the port. Hawkesnest is a double beach, inner and outer, shaped like a "V," the two beaches separated by sandhills, but converging at the point to a sandspit which connects it with the mountainous Yacoaba, which towers over the entrance. We had the sea on one side, the bay on the other.

Nearby was a log, covered with barnacles, and there I saw a Thais shell that was new to me. We searched carefully and found several more each, and a few weeks later I found seven more adults and several sub-adult.

With it were *Mytilus obscurus* Dunk. and a new Agnewia, which is more ventricose than *Agnewia tritoniformis* (Blain). It is of a deep bluish tinge throughout, marked with splashes of brown, and the ribbing is more widely spaced. It is also smoother than *tritoniformis*.

My first problem was to determine, if possible, the habitat of the new *Thais*. A floating log might have come from anywhere. No similar *Thais* could be found in the bay or along the foreshores. The shell it most resembles is *Dicathais scalaris* (Menke), found in New Zealand. It is certainly very different in appearance to our common cartrut shell, *Dicathais orbita* (Gmelin). This log might have drifted even from New Zealand, as both the other shells are generically or specifically represented there. So I first obtained from Mr. Powell specimens of *Neothais smithii*, and from Mr. Brookes specimens of some rarer forms of *Dicathais scalaris* (Menke), examination of which proved that this shell could be neither of these species. I must thank these gentlemen for their kindly assistance.

The barnacles proved to be a common variety found in all tropical and subtropical waters. Miss Pope, of the Australian Museum, was very interested in the problem, and helped me to identify it.

I then sent samples of the wood to the Forestry Commission, who informed me that it was scrub beefwood, sometimes referred to as silky oak. "Its distribution is from Milton on the South Coast of N.S.W. to Southern Queensland."

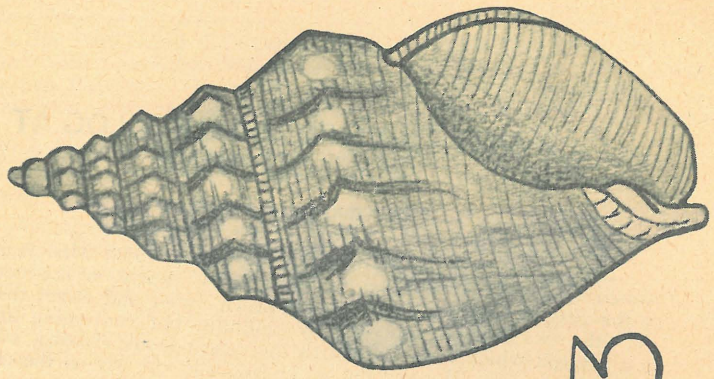
A few weeks before record floods had carried many logs to sea from all the river mouths of Northern N.S.W. Fishermen told me that for weeks the sea was full of them, all drifting south on the Notonectian current. Since the barnacles and shells on this log were only just dead, it seems to me to be fairly well established that it came south during these floods from some location on the mid-north coast of N.S.W.

So our new Thais went to sea like a stowaway riding on a log for his ship. Therefore, I am going to call the species *"vector,"* meaning "one who is carried," or "a passenger." His little companion may be called *Agnewia nautica*, the sailor.

The type description is as follows:—

Genus DICATHAIS Iredale, 1936

DICATHAIS VECTOR, sp. nov.



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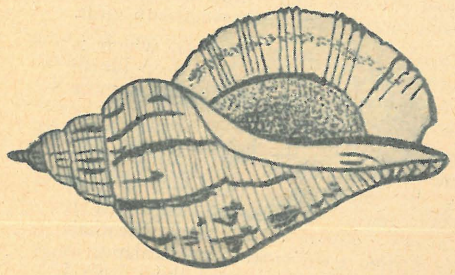

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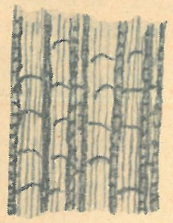

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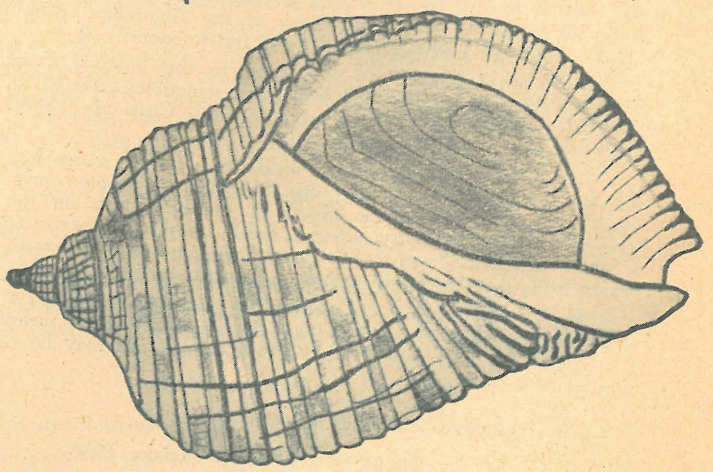

1. Dicathais vector, sp. nov.
2. Agnewia nautica, sp. nov.
3. Cominella eburnea Reeve.

Delin. Gertrude Thornley.

Shell ovate, ventricose, protoconch pale horn colour, of 3 whorls; four other whorls in the adult, somewhat shouldered, with small oblique lamellae at the sutures, which are closely conjoined; flat superficial ribs throughout on the body whorl. At the top they occur in groups of three, a wide rib, then a less wide, then a narrow rib; about half-way down they alternate wide and narrwo in pairs. The interstices are somewhat punctate. With a lens it is possible to see fine revolving striae on each rib. These ribs are crossed by growth lines, giving a somewhat cancellate appearance to the apical whorls. The aperture is wide, of a pale brownish white. Young specimens show brown radiating lines; adults have brown in the interstices at the edge only. Columella white; the shell being a drab light brown with dull brown irregular maculations. The upper whorls are bluish in colour.

This shell cannot be confused with *D. textiliosa* (Lam.) (a form of which seems also to occur in N.S.W.), though they are related species, but it resembles more closely the smooth form of *bicostalis* Lam., illustrated by Tryon, pl. 50, fig. 91. It is fairly similar to *D. scalaris* (Menke), of New Zealand, which may perhaps be its closest relation, though this shell seems also to have some affinities with the more tropical Indo-Pacific forms, such as *D. bicostalis* and *D. persica*.

This paper may serve to show how, in the pursuit of knowledge, the shell collector must often turn detective. The story of this shell is rather an unusual and fascinating one and still further work remains to be done before the mystery of its origin is fully solved. I must thank all the people who helped me with this somewhat unusual problem, Mrs. Jackson, Miss Pope, Miss Allan, who allowed me to compare the shells with those in the Australian Museum collections. Mr. Powell and Mr. Brookes, who so kindly forwarded me shells for comparison, and the Forestry Commission, who identified the wood for me.

The type specimens have been donated to the Australian Museum, and specimens also to the Royal Zoological Society.

Bibliography

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Menke, Verz. Conch. Samml. Mals., 1929, p. 33.

Tryon, Manual of Conchology, vol. 2, pl. 50, fig. 91.

COMINELLA EBURNEA Reeve

By R. Swan

A specimen was found on the 8th January, 1951, on the sandflat to the east of the bridge crossing the Wagonga Inlet, Narooma. It was crawling on open sand between oyster beds, below low water. Search failed to locate more than the one specimen, but in May several *Cominella lineolata* were found in a dead state, and one more *C. eburnea*.

I believe this to be the first specimen of *C. eburnea* to be found in N.S.W.

DESCRIPTION: Colour, orange brown or chestnut, with irregular cream spots and blotches. Shape fusiform, spire sharp, turreted, whorls sharply angled and nodulose. Sculpture: Broad ribs, crossed by spiral grooves. Aperture, ovate, light brown, lined within; lip sharp, canal broad and short. Operculum horny, dark brown. Size: 25 mm.

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A VISIT TO PORT STEPHENS

By T. GARRARD

A fortnight's holiday spent at Nelson's Bay, Port Stephens, yielded a a very varied assortment of shells. Beach collecting was poor at Nelson's Bay or Shoal Bay, but on the northern side, at Hawkesnest Beach, many specimens were found, including pairs of a number of bivalves, the most noteworthy being *Mactra eximia*. Beach collecting was also very good at Fingal Bay, mostly small varieties, although several *Voluta zebra* were found, and also numbers of *Janthina violacea*. The most valuable discovery at this spot was a good specimen of the rare *Laciniorbis morti*, and a number of *Cavolina* spp.

Dredging was carried out for a period of about three hours within 300 yards of Nelson's Bay trawler wharf, but yielded over 100 species of small shells, from a bottom of sandy mud and short ribbon weed, and included 12 species of *Marginella*, some alive, and also three live specimens of *Trigonostoma vinnulum*, a Cancellaria which is fairly uncommon, and somewhat resembles the Queensland *Cancellaria costifera*.

Practically the only shells found on the rocks west of Nelson Bay were three fairly good specimens of *Dinassovica militaris*, which I was rather surprised to find so far south.

Unfortunately, both the crayfish season and also a phenomenal run of prawns came to an end about three days after arriving, consequently the number of shells obtained from the trawlermen was not as good as hoped for. However, many bivalves were obtained alive, which are normally very scarce, including *Glycymeris flammeus*, *Glycymeris holoserica* and *Chlamys caroli*, as well as *Phalium insperatum* and several live *Ancilla velesiana*, the largest being a shade over 4 inches in length.

Most of the shells from the crayfish pots were poor specimens inhabited by hermit crabs, but those obtained included a few *Livonia mamilla*, good *Cymbiolena magnifica* and *Ericusa sowerbyi*, and one specimen of *Charonia euclia instructa*.

The most prized specimen from deep water was one *Ericusa sericata*, the new Volute recently discovered and described by Miss G. Thornley.

From the number of species obtained and broken pieces of other varieties noticed on the beaches and elsewhere, I am convinced that over a fairly long period it might be quite possible to obtain over 1,000 species of shells of all sizes from Port Stephens and its environs.

DULCERANA VERSIGRANULATA Iredale

This shell, known for many years as *Bursa granifera* (Lamarck) was first recorded in N.S.W. by G. F. Angas (Proceedings of the Scientific Meetings of the Zoological Society of London, 1877). He mentions that it was found at the Macleay River. Later he records that it was taken alive at the Bottle and Glass Rocks by Mr. Rossiter.

Bursa granifera (Lam.) is found in the Red Sea, Natal, throughout the islands and the north-east coast of Australia.

Mr. Iredale renamed the local shell, which is darker, broader and somewhat more promiently tuberculated than the typical form.

The animal of *Dulcerana versigranulata* Iredale has not previously been described. I have found two specimens alive at the south side of Long Reef, the first one on the 28th April, 1946, and the second one on 17th September, 1950. The description of the animal is as follows:—

Foot: Greyish white with minute mottling of cinnamon colour, more pronounced in the centre. Tentacles: Five stripes alternately white and black. The two small projections from near tail are also striped black and white. The small siphon under magnifying lens is whitish cream with very minute black mottling almost in lines round the edges. The eyes are black. The body of the animal was of light pinkish beige with extremely minute bright orange spots (only discernable with the aid of a magnifying glass) and mottled in dark cinnamon brown. The operculum is thin and horny, of light yellowish brown.

N. JACKSON.

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SOCIAL NOTES

One of the best (worst) aspects of becoming interested in conchology is that concurrently one develops a wanderlust. Most of us go places and perhaps the shells are an excuse.

One of our members, Mrs. K. Rutland, has been away now for over 18 months on a tour of England and the Continent. That is indeed a grand tour.

Most of us, however, have to content ourselves with trips in and around Australia.

Mr. Frank McCamley has been to Perth and Darwin, though on each trip he could only stay six or seven days, yet he managed to bring back some prizes from each location.

Mrs. Kerslake was lucky in being able to spend the winter of 1950 in Noumea, so is now busily attending classes in French. Evidently a second visit is being contemplated.

Mrs. Woolacott spent some weeks in Woolgoolga, N.S.W. She reported that collecting there was not of the best, but came back with a *Cypraea chinensis*, the only one so far recorded from N.S.W.

Miss Thornley and Mrs. Jackson spent a very delightful holiday at Ballina and Wooli.

Mr. and Mrs. Swann seem to make for Bermagui and the South Coast as well as trips to Queensland.

Mr. Garrard struck some collecting at Eden, which was surely a collector's dream come true—a beach covered with shells—volutes, bivalves and many others.

Mr. C. Laseron does not get around so much, as he is too busy writing his scientific papers; but son John gets to Queensland and is now planning a trip to Bowen.

Miss Thornley, who is perhaps the greatest gipsy of us all, has been to Adelaide, where she was warmly received by the Conchological Club of S.A. and by the members of the Adelaide Museum.

So we do get around!